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THE PLANT DISEASE REPORTER

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. The reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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LIMA BEAN DISEASES IN CALIFORNIA

William C. Snyder and John T. Middleton

During the 1944 growing season a survey of the diseases of the lima bean (Phaseolus lunatus) was undertaken especially in view of (a) the importance of this rather specialized crop to California, (b) the role played by California in fulfilling the needs of midwestern and eastern States for high quality lima bean seed, and (c) the implication in correspondence from a middlewestern source to the effect that western-grown lima bean seed carries bacterial blight.

Although the writers kept in close touch with the crop throughout the season by means of field trips, and by collections of plant material sent from time to time to the laboratory, the period from August 15 to 21, when plantings were in the green pod stage was chosen by the writers to be the most suitable time in which to make a search for diseases, especially those affecting foliage and pods. (The baby limas, grown mostly in central and northern counties, are not included in this report.)

The counties covered in the survey, and the approximate total acreage of limas grown for dry beans in each during 1944 are as follows, according to reports from the various Agricultural Commissioners' offices:

Ventura County	-	41,419
Orange County	-	25,925
San Diego County		11,800
Santa Barbara County		10,241
Los Angeles County		18,750
Total acreage	=	113,222

An attempt was made to obtain a representative cross section of each lima bean locality visited and of the lima bean growing industry as a whole.

Varieties grown in this region include Ventura, Lewis, King of the Garden, and similar field types in use locally. Among those grown for seed (or for processing) are the Fordhook types, Burpee's Improved Bush, and other market garden or bush varieties.

Ventura County. -- Fields were examined in the Ventura-Oxnard-Camarillo area, which is intensively cultured to limas, as well as those in the vicinities of Saticoy, Somis, and the Santa Clara River.

The stands were generally good, most of the seed having been treated with Spergon, and the plantings on the whole were remarkably free from disease. No foliage or pod diseases were found. Occasionally a superficial reddening of the leaf surfaces was observed but this appeared to be due to red spider infestation, salt and alkali injury, or to other less apparent forms of stress to which the plant was subjected. In no case was any bacterial or fungus organism found associated with the reddening. Prior to maturity, seed pitting symptoms suggestive of yeast spot (Nematospora phaseoli) were noted on specimens from this and other areas but it was uncertain at the time what may have been the actual cause.

In general, there was very little evidence of important root diseases, and the infection that was found by pulling up numerous plants was not

severe enough to cause top symptoms. In heavy or wet soils a superficial, light-brown, corky condition of the surface of the root was common but no pathogen was recovered in culture. Rhizoctonia solani was associated with a moderate root rot of occasional plants in many of the fields, but in only three fields was infection found to be general and the damage to the roots considerable, although even here the tops did not reflect the root condition. Light infection by Fusarium solani f. phaseoli was found in the Ventura-Oxnard area. Nematode, wireworm and alkali damage was spotty, occurring particularly on the lighter sandy soils.

Orange County. -- Fields were visited in the Santa Ana, Talbert, Irvine, and San Juan Capistrano areas.

Other than reddening or russeting of the foliage and marginal leaf burn in the alkali or high salt areas, particularly on light ground, no foliage diseases were found. In the Irvine district where abundant top growth was obtained on the heavier soils under irrigation some pods touching the soil were found infected with Rhizoctonia solani. In the San Juan Capistrano area pod blast or shedding, thought to be due to heat, affected the top set of pods in one field where growth was lush.

A moderate amount of root rot caused by Rhizoctonia solani was found on the irrigated land, especially in the Irvine district. In one planting on irrigated sandy soil, Rhizoctonia root rot was severe but complicated by nematode and wire worm damage. Macrophomina bataticola was picked up on an occasional plant in this area. Sclerotium rolfsii has been known to occur in the district but none was observed during the 1944 survey. F. solani f. phaseoli was found in the Santa Ana area along with Rhizoctonia solani, but the damage caused appeared slight.

Indications that late irrigations on heavy land could contribute to seed infection by Rhizoctonia, by allowing contact of pods with moist soil, were seen in an irrigated field where the vines had already been cut and windrowed. Here it was estimated that in one corner of the field about 1% of the pods had been invaded by the fungus.

San Diego County. -- Surveyed in this County, in cooperation with Mr. B. J. Hall and Mr. D. H. Close of the Farm Advisor's Office, were the Otay mesa area, Rose Valley, and the districts near Sorrento, Del Mar, Encinitas, and Oceanside.

Except in 2 or 3 alkali or salt spots no reddening or marginal burning of foliage was evident. No other troubles of foliage or of pods were found in the County except for one leaf infected with powdery mildew (probably Erysiphe polygoni) in a field near Del Mar. However, powdery mildew is known to become abundant and sometimes severe in late plantings of lima beans made in this County for the fall green market. In fact, it apparently has been the infection of pods by powdery mildew in this County which has led in the past to reports that downy mildew (Phytophthora phaseoli) was present. In recent years the writers have attempted to check all claims as to the presence of downy mildew, and in every case the pods have been affected only with powdery mildew.

Most of the plantings in the County were on heavy soil which was not under irrigation, and under these conditions there was very little root rot damage. In a field in the Otay mesa area an occasional plant was found to have died when about 6 inches tall, apparently from Rhizoctonia solani, at least such plants were found heavily invaded by this fungus.

Since the surrounding plants, when pulled, were free from Rhizoctonia the circumstances suggested that the failure of these individuals in the seedling stage may have resulted from seed-borne Rhizoctonia infection.

Two plants were found infected with Macrophomina bataticola (pycnidial stage present), one near Del Mar, the other at Sorrento.

Los Angeles County. -- Fields were seen in the San Fernando Valley. No foliage or pod diseases were observed, but light infections by Rhizoctonia solani and F. solani f. phaseoli were found on some plants in several fields, and in one the Rhizoctonia root rot was general and of moderate severity.

Santa Barbara County. -- Coastal plantings were observed between Gaviota and the county line to the south. No foliage or pod diseases were present but occasional plants bearing light infection by F. solani f. phaseoli were collected.

Discussion. -- The survey reported here was made on the large lima bean crop grown for dry beans and for seed during the normal summer-dry season. Since the culture of the common lima for dry beans is rather restricted to the southern coastal counties an intensive survey was made in this region. The results are essentially in agreement with those obtained from time to time in the same area in past years.

Foliage and pod diseases were conspicuous by their absence. Occasional evidence of heat blast of the top set of pods, of Rhizoctonia infection of pods under certain circumstances, of physiological reddening or burning of foliage, and of a trace of powdery mildew constituted the only foliage or pod diseases observed (except for a possible case of "yeast spot"). No bacterial blights or spots (Bacterium [Xanthomonas] phaseoli, Bacterium [Pseudomonas] medicaginis v. phaseolicola, Bacterium vignae [Pseudomonas syringae]), nor pod blight (Diaporthe phaseolorum), nor downy mildew (Phytophthora phascoli), nor scab (Elsinoë phaseoli), nor stem anthracnose (Colletotrichum truncatum), nor virus diseases were found in 1944, nor have the writers seen these diseases at other times in this area. It is believed that the bacterial and fungus diseases listed above are wet-weather troubles unsuited to development on large lima beans in the rainless growing season in which the crop is produced in California.

Below ground troubles were more numerous but for the most part unimportant. Experience of several seasons indicates that Rhizoctonia solani, Fusarium solani f. phaseoli, and Pythium ultimum may cause seedling damage some seasons in some areas. Later in the season Macrophomina phaseoli may enter, insignificantly, into the root rot complex, as may also nematodes and insects.

As a result of the survey the impression was gained that the least diseased and best appearing plants occurred on medium to heavy soil under moderate or no irrigation.

It is the conclusion of the 1944 survey, and of observations in other years, that lima bean seeds grown in California during the normal summer season carry no bacterial pathogens since no bacterial infection of any parts of the plants have been observed in any instance, and likewise, for the same reason, that such seed can be depended upon to be free from the other seed-borne diseases listed above as absent.

CALIFORNIA AGRICULTURAL EXPERIMENT STATION, DIVISION OF PLANT PATHOLOGY, BERKELEY AND RIVERSIDE, CALIFORNIA

TOBACCO DISEASES IN KENTUCKY IN 1944

W. D. Valleau and E. M. Johnson

Tobacco Diseases in Plant Beds. -- Many beds were sown exceptionally early in central Kentucky -- that is in the middle of February -- others in the middle of March. A few were sown very late because of rain delaying plowing. Beds sown in February had poor stands, so far as we observed them, probably because of cold weather after germination. The later-sown beds had unusually heavy stands. Cold injury, resulting in pinched white leaves in the growing point, was quite general over the State where plants were about 2 inches in diameter. There was much more injury than we have seen any year previously.

Practically no fertilizer injury was observed because of frequent rains during the early stages of growth when the plants are most susceptible to injury from salts which accumulate on the surface of the beds during dry periods.

Angular leaf spot and wildfire [Pseudomonas angulata, P. tabaci] were not as general in 1943. In central Kentucky about 40% of the beds were treated with bordeaux mixture, as compared with about 20% in 1943. In one instance a treated bed was found to have scattered plants in the alleyways affected with angular leaf spot and about 10 days later angular leaf spot had affected some plants along the edge but under the cotton. A few wildfire spots were also found along the edge of a treated bed. This suggests the advisability of sprinkling bordeaux over the bare ground along the edge of the bed in the case of unboxed beds to prevent infection on tobacco plants growing outside of the bed.

No blue mold [downy mildew, Peronospora tabacina] was seen or reported in beds, either before or after setting, suggesting that there is practically no carry-over in the State and that outbreaks are nearly completely dependent on spores blown in from the South.

Cercospora [nicotianae] was uncommon in beds examined about pulling time, but some weeks later it was fairly abundant in discarded plant beds.

Anthracnose (Colletotrichum destructivum) was found in 3 beds, causing leaf and stalk spots.

Good stands of plants were difficult to obtain, in part because of exceptionally hot weather in late May which caused rapid growth and very spindly plants. The setting season was also exceptionally hot with consequent scalding of the stalks of spindly plants.

Two groups of beds were seen in which plants took on a very abnormal type of growth shortly before setting time or even after setting in the field. In one set of beds the leaves were small, thick, and irregular in shape somewhat like a severe case of mosaic but without mottling. Nearly all plants in parts of the beds were affected, while other parts had only an occasional abnormal plant. About 50% of the plants in the field were abnormal after growth commenced, but later growth was normal. In the other group of beds the leaves were very narrow and lance-shaped, with a tendency toward abnormal venation. Both sets of beds were treated with a very heavy application of chicken manure, raked in before sowing. It is possible that some growth-regulating substance may have been taken from the chicken manure produced by chickens fed on concentrated feeds.

Another set of beds in which nearly all plants had stunted growing points and abnormally shaped leaves, both in the bed and after setting in the

field, had had Vigoro fertilizer applied on the cotton cover and washed in about 10 days before setting time. Plants from this bed appear to be making normal growth when set in ground benches in the greenhouse.

Tobacco Diseases in the Field. -- Following setting and until about August 14 a drouth prevailed over most of the state. Tobacco in highly fertile soil developed normally and was ready to cut before the rains in late summer. In less fertile soil, plants suffered from the drouth, but over most of the State had not commenced to bloom before heavy rains. Potash starvation was severe on unfertile soils. Following rains, the crops grew rapidly and made large, heavy, very late tobacco. In spite of abundant rains in the fall, leaf spots caused very little injury, although some angular leaf spot, wildfire, and frogeye was seen. Curing conditions were bad. The increased acreage, with heavy yields, resulted in barns being crowded with large tobacco. The curing season was cool, and too many barns were kept closed during the cool weather, resulting in very low temperatures in the barn and much green tobacco. Houseburning was common and severe.

The black root rot-resistant varieties, Kentucky 16 and Kentucky 41A, are now widely used and are proving exceptionally valuable on highly fertile land because of their potential yielding abilities. A few years ago 2000 pounds per acre was considered about the maximum, but with the introduction of these new varieties yields of 2000 pounds are common, and many reports have been received of over 3000 pounds per acre. A total of 90 acres of certified seed of these 2 varieties was produced in 1944.

Fusarium wilt [F. oxysporum f. nicotianae] has increased rapidly in the State during the past 10 years, in areas where diseased plants were rare a few years ago. Kentucky 33 is proving very valuable because of its resistance to wilt and black root rot and because of its high quality. Kentucky 34 is also resistant to Fusarium wilt as well as being resistant to black root rot and mosaic (NN). It produces more tobacco per acre than any variety previously grown in the State and is exceptionally free from disease, but is objectionable because it is inclined to blow over during rainstorms.

Kentucky 52, a mosaic-resistant (NN), root-rot-resistant burley of very high quality has been tested for several years and is proving valuable, although it does not yield so well as Kentucky 16. Several other mosaic-resistant and root-rot-resistant varieties derived from Kentucky 16 are being tested with farmers with apparently good results.

During the past 2 years streak has been severe in the northern section of the State where sweet clover is a roadside weed. Usually streak appears about the middle of July, with no spread after that time. The past 2 years, following a drouth period in midsummer, streak has appeared abundantly in September. It was thought in 1943 that infection had taken place in July but because of slow growth had not become systemic until after rains, but in 1944 many primary lesions were found on rapidly growing plants in September, sometimes as many as seven on a plant, indicating that long after second-year sweet clover had died tobacco plants were still being inoculated.

Black root rot [Thielaviopsis basicola] was found causing extensive injury in Robertson County on September 19, a month after the rainy period set in. This is unusual, as root rot is usually an early summer disease with considerable recovery as the season progresses.

KENTUCKY AGRICULTURAL EXPERIMENT STATION

ONE CAUSE OF POOR GERMINATION OF TOBACCO SEED

In connection with the certification of tobacco seed of varieties produced by the Kentucky Experiment Station, certain seed lots have had such poor germination that it was necessary to tag them with a red certification tag or refuse certification when the germination was below 65 percent. In looking for the cause of low germination it was found that seed with cracked seed coats failed to germinate and that by a count of the cracked seeds the germination of fresh, well cleaned seed could be predicted fairly accurately. The cracked seed could not be removed by the usual seed cleaners and consequently recleaning did not raise the germination. The cause of cracked seed was found to be the use of a hammer mill in threshing, or of a combine which was run too fast. Tramping out with shoes seems to produce satisfactory seed, and threshing with a burr mill or with a cider mill gives satisfacotry results. -- W. D. Valleau, Kentucky Agricultural Experiment Station

DISEASES OF LUPINE IN GEORGIA AND ALABAMA

G. M. Stone

Lupinus angustifolius has become an important winter cover crop in the southern part of Georgia and Alabama. Surveys of lupine diseases were made in early December and again in February, to observe as far as possible the development of the root or foot rots which are the most important diseases of the crop.

A number of factors make it difficult to evaluate damage to lupine by root or foot rot organisms. In the first place, lupine seedlings are apparently susceptible to root injury by freezing, which is similar to and easily confused with foot rots as in the case of alfalfa root freezing injury described by Dr. J. L. Weimer (Journ. Agr. Res. 40 (2): 121-143). Secondly, lupine seedlings apparently are weakened severely by the lack of effective root nodule inoculation. Thirdly, what at first might appear to be foot rot is often decay following insect (grub) injury.

Dr. Weimer (Journ. Agr. Res. 68 (2): 441-457) has described root and foot rots of lupines caused by several species of Fusarium, Rhizoctonia solani, Pythium graminicolum, and Sclerotium rolfsii. Fusarium oxysporum f. radicis-lupini Weimer, according to him, is probably the most frequent cause of the root rotting of lupines.

From field observations it is apparent that infection by any of these organisms is not limited to the early seedling stage. When infection occurs in that stage, damage is severe and few diseased plants recover. Infection after the plants have become well established causes less severe damage and many of the diseased plants recover. It was somewhat surprising to find Sclerotium rolfsii active on occasional plants during mid-winter

Isolations made from specimens collected in Georgia and Alabama by Dr. Weimer, Mr. Coyt Wilson, and the writer, substantiate Dr. Weimer's earlier findings that species of Fusarium are the principal cause of root rot on lupines in this section. Pythium damping-off was encountered rather frequently in the early seedling stage. Rhizoctonia foot rot was found only occasionally. Alternaria spp. isolated frequently from above ground stem lesions were probably secondary following freezing injury.

Rootknot (nematode) [Heterodera marioni] was found in 2 fields near Albany, Georgia. The Botrytis disease (described by Weimer, Phytopath. 33 (4)) was found to be prevalent in the vicinity of Auburn, Alabama, but was not found elsewhere.

The writer is indebted to Dr. J. L. Weimer, Georgia Agricultural Experiment Station and Mr. Coyt Wilson, Alabama Agricultural Experiment Station for their assistance in making isolations and identifications of the organisms obtained.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

A STREAK DISEASE OF CORN IN CALIFORNIA

Norman W. Frazier

A disease of corn (Zea mays L.), apparently hitherto unreported from California, has been observed each year since 1942 in Tulare and Fresno Counties in the San Joaquin Valley where it is damaging in sweet and field corn plantings, causing reduction in size, number, and quality of ears. It is not known in what other counties of the State the disease occurs. The most marked effects have been observed on field corn from which the following symptoms are described.

Early symptoms as observed on young 12-inch plants consisted of mild, scattered chlorotic spotting and mottling of the leaves. On maturing plants chlorosis may be evidenced as small to large, round irregular spots in the leaf and leaf sheath, which may be isolated with few per leaf or merged for a distance to form streaks. Leaves may commonly show broad chlorotic-green or light-cream stripes extending for variable distances, often the entire length, of the leaf. The stripes are usually irregular in width and broken with degrees of mottling, and often are purplish to reddish discolored, especially at the apex and margins of the leaf. Discontinuous areas of chlorotic tissues, and sometimes large continuous areas or the entire leaf, may dry up. On the inner surface of the sheath, brownish to blackish variable sized sunken areas develop which are often surrounded with small rust-colored pits or depressions. The sunken necrotic tissues aredry and there apparently is no spread to the contiguous tissues of the stalk.

During late summer plants have been observed to dry up very suddenly, sometimes 1 or 2 leaves or portions thereof, less often an entire plant. Effects of the disease are apparently most severely expressed during late summer and early fall when high temperatures and low humidities prevail.

Ears usually show some degree of underdevelopment; often they are merely vestigial. The husks commonly exhibit more marked chlorosis and striping than do the leaves. Tassels are sometimes abnormally formed, tending to resemble ears, with consequent degrees of sterility. Some degree of stunting is commonly evidenced. The most severely affected stalks are the suckers of infected plants. They are often very chlorotic (resembling genetic chlorosis), severely stunted, and rarely produce more than vestigial ears. Early planted corn seems to escape much loss while the later plantings are much more severely damaged.

It is not known whether this disease is related to other corn diseases that have been described from other areas, nor whether it results from a virus or insect toxin or may be attributed to other causes. However, high

populations of a leafhopper, Baldulus maidis De L. & W.[1], are commonly found in Tulare and Fresno Counties breeding on corn, and usually may be found infesting every stalk throughout an entire planting. Since plantings with 100% disease incidence have often been observed, it was thought possible that the disease might be the result of a toxin injected by the leafhopper. On the other hand, there seems to be no obvious relation between severity of disease symptoms and percentage infection in a planting, and density of leafhopper population. It seems therefore equally possible that the causative agent may be a virus. Again, the greater losses occasioned to the later plantings might be correlated with the increase in leafhopper population, which reaches a peak during fall. This is purely circumstantial evidence and this leafhopper may not, of course, be involved in any manner.

DIVISION OF ENTOMOLOGY, CALIFORNIA EXPERIMENT STATION, BERKELEY, CALIFORNIA

FUNGI FOUND ON IMPORTED AUSTRALIAN WHEAT

Flora G. Pollack

Following amendment, effective June 9 and November 30, 1944, of the Federal Plant Quarantine on flag smut because of a temporary emergency situation, 5 shiploads of Australian wheat were brought into the port of San Pedro during the period September-December 1944 for processing for local use as animal feed. Upon arrival each shipload was carefully examined by Plant Quarantine Inspectors of the California State Department of Agriculture, serving as collaborators of the Bureau of Entomology and Plant Quarantine. A particular search was made for evidences of flag smut (Urocystis tritici) and a total of 7 small specimens of leaf-fragments carrying this fungus were found in 3 of the 5 shiploads.

In addition, a considerable number of other wheat stem and leaf fragments were collected bearing other fungi which have been determined as follows:

Fungus	Number of lots
Puccinia rubigo-vera var. tritici	17
Puccinia graminis var. tritici	5
Tilletia caries	1
Tilletia foetida	1
Ascochyta graminicola	1
Phoma iophiostomoides	7
Selenophoma sp. This is apparently a new host for this fungus.	5
Septoria tritici	17
Alternaria sp.	1

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[1] The author is indebted to Dr. R. H. Beamer, University of Kansas, Lawrence, Kansas for determining the species.

There was also one specimen of what was apparently Ustilago hordei on a fragment of smutted barley spike.

DIVISION OF MYCOLOGY AND DISEASE SURVEY

POWDERY MILDEW OF MESQUITE

John A. Stevenson

The mesquite of the southwestern United States, Prosopis chilensis (P. juliflora, P. glandulosa, etc.) is commonly subject to a powdery mildew in Texas and adjoining Mexico. It is probable that the fungus occurs throughout the range of the host, which in this country includes a number of other States, but specimens have not been available to prove this point. Heald and Wolf (Texas Acad. Sci. 11: 9. 1911, and Bur. Pl. Ind. Bull. 226: 73. 1912) list a powdery mildew on mesquite from 14 localities in Texas, referring it tentatively to Erysiphe sp., in the absence of mature fruiting bodies. They report it as frequent on young plants near the end of the growing season.

Tharp (Mycologia 9: 124. 1917) referred a specimen collected at Austin, Texas to Uncinula prosopidis Speg. (Ann. Mus. Nac. Buenos Aires 19: 324. 1909), pointing out, however, in detail how his fungus differed from that described by Spegazzini. Specimens received from time to time in this herbarium from Texas localities, as well as one from near Matamoras, Mexico, have been heretofore assigned provisionally to the Spegazzini species.

Material recently sent by Robert Runyon from Brownsville, Cameron County, Texas caused the writer to re-examine available specimens of this powdery mildew. Microscopic study showed that the Texas fungus differs in many respects from that described by Spegazzini, confirming Tharp's note. In fact it is not only not Spegazzini's species but it does not even belong in the genus Uncinula, because the appendages are straight rather than uncinate or circinate. As a further check representative material was sent to Prof. Juan Lindquist, director of the "Instituto de Botanica Spegazzini" of the University of La Plata, Argentina, who was kind enough to compare it with the type of U. prosopidis. He reported that the Texas fungus was distinctly different in growth habit and in microscopic characters.

The fungus is amphigenous, but perhaps more abundant on upper leaflet surfaces. Beginning in small scattered patches it commonly develops rapidly in fall and early winter until entire leaves to the last leaflet, and even all leaves of a plant, may be densely covered. Much of the "mildew" layer consists of conidia and conidiophores which are in themselves distinctive. Conidiophores may develop from superficial hyphae or grow out through the stomata. The conidia are long cylindrical with rounded ends, slightly roughened, 40-60 x 12-16μ. These conidia are present in all specimens examined, including the collections of Heald and Wolf and of Tharp.

Perthecia are lacking on many specimens and quite generally immature even when present. Those studied are globose-depressed, or almost pezizoid in shape, a character noted by Salmon (A monograph of the Erysiphaceae, p. 217. 1900) who adds "so characteristic that it makes it one of the few species of Erysiphaceae which can be safely determined with the

lens". They measure 125-270μ in diameter. Each bears numerous appendages, crowded and interwoven and suggesting the appearance of Uncinula, but differing as noted above in being straight at the tips. They are hyaline, variable in length up to 100μ, and rarely branched. Asci are numerous, 60-75 x 24-30μ, 2-spored, rarely 3 to 4 spored. Mature spores have not been found in available material, but a few noted were 19-25 x 13-15μ.

These characters indicate that the fungus is Leveilulla taurica (Lév.) Arn. or Erysiphe taurica Lév. as recognized in the more conservative monograph of Salmon (l.c. pp. 215-221). No previous reports of the occurrence of this fungus in North America have been found except for a very brief note by Blumer (Die Erysiphaceen Mitteleuropas, pp. 404-407. 2 figs. 1933) in his discussion of the species to the effect that a related form occurs in Texas. He does not specify the host.

L. taurica is a variable species or a species complex occurring on many hosts and under many names in Europe, Asia and North Africa. Salmon records 13 synonyms and Blumer adds 11 more. Jaczewski in a Russian work on powdery mildews notes its occurrence on 85 genera in 28 familes. Blumer (l.c.) suggests that with further study morphological grounds will be found for segregating a series of new species. The material under study here, though exhibiting some discrepancies from the characters of the species as described by Salmon and by Blumer, does not appear to differ sufficiently to warrant the setting up of a new binomial.

DIVISION OF MYCOLOGY AND DISEASE SURVEY

FURTHER NOTES ON THE OCCURRENCE OF SEPTOBASIDIUM SPP. IN FLORIDA

Arthur S. Rhoads

The following records are based on collections that have been made from January 1 to June 20, 1944. Those on Septobasidium spp. contribute materially to our knowledge of the hosts and distribution of this group of fungi in Florida, where little is known concerning these points, and record a large number of new and hitherto unreported host records. The number of collections of the different species afford a good idea of their relative frequency of occurrence.

Septobasidium burtii Lloyd was collected on chickasaw plum (Prunus angustifolia Marsh.) at Silver Springs (Marion County) and on bald cypress (Taxodium distichum (L.) Rich. at Hastings (St. Johns County). Both constitute new host records for this fungus.

S. castaneum Burt was collected on several previously unrecorded hosts including Carolina ash (Fraxinus caroliniana Mill.) at Hastings (St. Johns County); oneflower hawthorn (Crataegus uniflora Moench) at Gainesville (Alachua County); Southern waxmyrtle (Myrica cerifera L.) at Magnesia Springs (Alachua County), at Zellwood (Orange County), at Hastings, south of Federal Point, East Palatka and San Mateo (Putnam County), and at Glencoe 3 miles west of New Smyrna and south of Barberville (Volusia County), in some localities of frequent occurrence on this host; chickasaw plum at Florahome (Putnam County) and Silver Springs (Marion County); black cherry (Prunus serotina Ehrh.) 8 miles west of Gainesville (Alachua County); on myrtle oak (Quercus myrtifolia Willd.) at Florahome (Putnam County),

south of Merritt Island P. O. on Merritt Island (Brevard County), at Staurt (Martin County), and at Jupiter and south of Delray Beach (Palm Beach County); and bald cypress at Hastings (St. Johns County), a small specimen being collected on a branch of two young trees.

This species was also collected on sweet gum (Liquidamber styraciflua L.) at Worthington Springs (Union County), at Kirkwood and Magnesia Springs (Alachua County) and between Barberville and De Leon Springs (Volusia County); on laurel oak (Quercus laurifolia Michx.) at Gainesville and Magnesia Springs (Alachua County), at Hastings and south of Federal Point (St. Johns County), at Melrose, East Palatka and south of Palatka (Putnam County), at Green Cove Springs (Clay County), and at Oak Hill and between Barberville and De Leon Springs (Volusia County), occurring abundantly in places; and on water oak (Quercus nigra L.) at Gainesville, Kirkwood and Magnesia Springs (Alachua County), at Melrose (Putnam County), south of Federal Point (St. Johns County), at Green Cove Springs (Clay County), and north of Titusville (Brevard County), occurring abundantly in some localities.

S. cokeri Couch was collected on laurel oak between Barberville and De Leon Springs (Volusia County) and at Hastings (St. Johns County). This is a new host record for this fungus which appears to be of very rare occurrence in Florida.

S. cremeum Couch was collected on small stems of gallberry (Ilex glabra (L.) A. Gray) between the Ocklawaha River and Lake Bryant Ranger Station.

S. curtisii (Berk. & Desm.) Boed. & Stein. was collected on a number of new hosts, including Carolina ash at Worthington Springs (Union County) and Hastings (St. Johns County); sweetbay magnolia (Magnolia virginiana L.) west of Eustis Transfer (Lake County) and south of Barberville (Volusia County); and southern waxmyrtle at Magnesia Springs (Alachua County), Zellwood (Orange County), and south of Barberville (Volusia County). In addition, it was collected on American hornbeam (Carpinus caroliniana L.) at Magnesia Springs (Alachua County); black gum (Nyssa sylvatica Marsh.) near Hague (Alachua County); and swamp black gum (N. sylvatica var. biflora (Walt.) Sarg. at Green Cove Springs and Gold Head Branch State Park (Clay County) and south of Palatka (Putnam County).

S. fumigatum Burt was collected as follows, all except the first being new host records: on trident red maple (Acer rubrum var. tridens Wood) at Hastings (St. Johns County) and west of Eustis Transfer (Lake County); small-fruited dogwood (Cornus microcarpa Nash) west of Eustis Transfer (Lake County); Florida ash (Fraxinus pauciflora Nutt.) at Gainesville (Alachua County); pigeon seagrape (Coccolobis laurifolia Jacq.) in Royal Palm State Park (Dade County), extensive patches developing on trunks of a few large trees; waterelm (Planera aquatica (Walt.) Gmel.) at Worthington Springs (Union County); and muscadine grape (Vitis rotundifolia Michx.) at Gainesville (Alachua County).

S. langloisii Pat. was collected on small-fruited dogwood at Oviedo (Seminole County); hawthorn (Crataegus subviridis Beadle) at Hastings (St. Johns County); Carolina ash at Worthington Springs (Union County and Hastings (St. Johns County); and pumpkin ash (Fraxinus tomentosa var. ashei Palmer) at Gainesville (Alachua County), Silver Springs (Marion County), and west of Eustis Transfer (Lake County), all new host records for the species; and on American hornbeam at Worthington Springs (Union County), Gainesville and Magnesia Springs (Alachua County), and Hastings (St. Johns County), and sweetbay Magnolia at Ocklawaha (Marion County), and west of Eustis Transfer (Lake County).

S. lepidosaphis Couch was collected on eastern Baccharis (Baccharis halimifolia L.) at Royal Palm State Park (Dade County), a new host record for this fungus, which was reported previously only on grapefruit and lime in Florida.

S. leprieurii (Mont.) Pat. was collected on Carolina ash at Hastings (St. Johns County); pumpkin ash at San Mateo (Putnam County); hummock holly (Ilex cumulicola Small) at East Palatka (Putnam County); gallberry between the Ocklawaha River and Lake Bryant Ranger Station, occurring rather frequently on small stems; sweet gum south of Federal Point (St. Johns County); sweetbay magnolia at Ocklawaha (Marion County) and south of Barberville (Volusia County); and Florida poison-tree (Metopium toxiferum (L.) Krug & Urban), being found on a single tree in Mattheson Hammock south of Coconut Grove but occurring frequently on young trees in Royal Palm State Park (Dade County). Except for sweetbay magnolia, these are all new host records for this fungus.

S. mariani Bres. was collected on various species of hawthorns, occurring on Crataegus limnophiloides Murr., C. subaudens Murr., and C. uniflora at Worthington Springs (Union County), and on C. subviridis at Hastings (St. Johns County). These are all new host records for this fungus.

S. patouillardii Burt was found occurring in great abundance on pumpkin ash at San Mateo (Putnam County), a new host record for this fungus.

S. pseudopedicellatum Burt. New host records for this species include, boxelder (Acer negundo L.) west of Gainesville (Alachua County); Alabama supplejack (Berchemia scandens (Hill) Trelease) in two localities at Hastings (St. Johns County); southern hackberry (Celtis laevigata Willd.) 7 miles west of Gainesville (Alachua County); Florida ash at Gainesville (Alachua County); pumpkin ash at San Mateo (Putnam County) and west of Eustis Transfer (Lake County); Carolina jessamine (Gelsemium sempervirens (L.) Ait. f.) at Gainesville (Alachua County); Florida leucothoë (Leucothoë acuminata (Lam.) Dipp.) at Green Cove Springs (Clay County); Florida poison-tree at Jupiter (Palm Beach County); southern waxmyrtle at Magnesia Springs (Alachua County) and at Hastings (St. Johns County); red bay (Persea borbonia (L.) Spreng.) at East Palatka (Putnam County) and between the Ocklawaha River and Lake Bryant Ranger Station (Marion County); shorebay (Persea littoralis Small) south of Merritt Island P. O. on Merritt Island (Brevard County) and at Jupiter (Palm Beach County); swampbay (Persea palustris (Raf.) Sarg.) at Winter Park (Orange County); and on greenbriers, occurring on Smilax auriculata Walt. north of Titusville (Brevard County) and at Green Cove Springs (Clay County), and on S. laurifolia L. at Ocklawaha (Marion County).

Other plants on which it was found are: trident red maple at Worthington Springs (Union County), at East Palatka and San Mateo (Putnam County), and between Barberville and De Leon Springs (Volusia County); American hornbeam at Gainesville and Kirkwood (Alachua County) and south of Palatka (Putnam County); grapefruit (Citrus paradisi Macf.) at Oak Hill (Volusia County), occurring fairly commonly on a number of trees in a citrus grove; flowering dogwood (Cornus florida L.) at Gainesville (Alachua County); small-fruited dogwood west of Eustis Transfer (Lake County); hawthorns, occurring on Crataegus limnophiloides at Worthington Springs (Union County), C. robur Beadle at Gainesville (Alachua County), and C. subviridis at Hastings (St. Johns County); Carolina ash at Worthington Springs (Union County), at Magnesia Springs (Alachua County), at Hastings (St. Johns

County) and between Barberville and De Leon Springs (Volusia County); dahoon (Ilex cassine L.) at Winter Park (Orange County); sweet gum at Worthington Springs (Union County) and south of Federal Point (St. Johns County); laurel oak at Gainesville (Alachua County), Hastings (St. Johns County) and East Palatka (Putnam County); and winged elm (Ulmus alata Michx.) 8 miles west of Gainesville (Alachua County).

S. rugulosum Couch was observed occurring in great profusion on one large bush of Walters Viburnum (Viburnum obovatum Walt.) at Hastings (St. Johns County), a new host record for this fungus.

S. schweinitzii Burt was collected on shorebay south of Merritt Island P. O. on Merritt Island (Brevard County) and at Jupiter (Palm Beach County), a new host record for this fungus.

S. sinuosum Couch was collected on the following new hosts: peppervine Ampelopsis (Ampelopsis arborea (L.) Rusby) at Gainesville (Alachua County) and San Mateo (Putnam County); Alabama supplejack at Hastings (St. Johns County); southern hackberry 8 miles west of Gainesville (Alachua County); small-fruited dogwood west of Eustis Transfer (Lake County); black titi (Cyrilla racemiflora L.) at Worthington Springs (Union County); Carolina ash at Hastings (St. Johns County); pumpkin ash at San Mateo (Putnam County) and west of Eustis Transfer (Lake County); gallberry between the Ocklawaha River and Lake Bryant Ranger Station (Marion County); Florida leucothoë at Green Cove Springs (Clay County); Florida poisontree at Jupiter (Palm Beach County); devilwood Osmanthus (Osmanthus americanus (L.) Gray) at Gold Head Branch State Park (Clay County); red bay 8 miles west of Gainesville (Alachua County); swampbay at Winter Park (Orange County); Wakulla American plum (Prunus americana var. floridana Sarg.) at Gainesville (Alachua County); chickasaw plum at Gainesville (Alachua County), at Silver Springs and 3 miles west of Altoona (Marion County), at Florahome and south of Palatka (Putnam County), and at Green Cove Springs (Clay County); black cherry 8 miles west of Gainesville (Alachua County); bald cypress at Hastings (St. Johns County) and Winter Park (Orange County); farkleberry (Vaccinium arboreum Marsh.) at Green Cove Springs (Clay County); and muscadine grape at Gainesville (Alachua County), at Ocklawaha (Marion County), south of Palatka (Putnam County), and at Winter Park (Orange County).

Additional collections of this species were made on American hornbeam at Gainesville, Kirkwood and Magnesia Springs (Alachua County) and south of East Palatka (Putnam County); Virginia sweetspire (Itea virginica L.) south of Barberville (Volusia County) and west of Eustis Transfer (Lake County); sweet gum at Worthington Springs (Union County), at Kirkwood and Magnesia Springs (Alachua County), at East Palatka (Putnam County) and between Barberville and De Leon Springs (Volusia County); sweetbay magnolia south of Barberville (Volusia County); southern waxmyrtle at Magnesia Springs (Alachua County), at Winter Park and Zellwood (Orange County), at Hastings and south of Federal Point (St. Johns County), at Gold Head Branch State Park (Clay County) and south of Barberville (Volusia County), occurring fairly abundantly at some points; laurel oak at Gainesville (Alachua County), near Montverde Junction (Lake County), at East Palatka and south of East Palatka (Putnam County), at Green Cove Springs (Clay County), and between Barberville and De Leon Springs (Volusia County); and water oak at Gainesville and Kirkwood (Alachua County), at Melrose, East Palatka and south of Palatka (Putnam County), south of Federal Point (St. Johns County), at Green Cove Springs (Clay County), and at

Winter Park (Orange County).

S. tenue Couch was collected on Alabama supplejack at Hastings (St. Johns County), sweetbay magnolia south of Barberville (Volusia County), redbay at East Palatka (Putnam County), and shorebay south of Merritt Island P. O. on Merritt Island (Brevard County), all except sweetbay magnolia constituting new host records for this fungus.

Some Corrections to the Previous List. In the Plant Disease Reporter (Vol. 28, No. 7, p. 270, Apr. 1, 1944) the name of the bigflower pawpaw listed under Septobasidium castaneum should read Asimina obovatum instead of Asimina triloba. On the same page the notes under S. langloisii and S. sinuosum should read as follows:

"S. langloisii Pat. was found forming extensive bluish patches a foot or more in length on trunks of American hornbeam and was also found sparingly on Florida ash, Fraxinus pauciflora Nutt., at Gainesville. The latter collection constitutes a new host record for this fungus."

"S. sinuosum Couch was collected on twigs of sweet gum at both Silver Springs and at the Ocklawaha River several miles east of Silver Springs. It was collected also on Virginia sweetspire, Itea virginica L., at Black Lake, Melrose in Alachua County, which constitutes a new host record for this fungus."

EMERGENCY PLANT DISEASE PREVENTION PROJECT